

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date  
16 December 2004 (16.12.2004)

PCT

(10) International Publication Number  
WO 2004/109815 A1

(51) International Patent Classification<sup>7</sup>: H01L 33/00, (74) Agent: LEE, Young-Pil; The Cheonghwa Bldg., 1571-18 B82B 3/00 Seocho-dong, Seocho-gu, Seoul 137-874 (KR).

(21) International Application Number:  
PCT/KR2004/000374

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date: 24 February 2004 (24.02.2004)

(25) Filing Language: Korean

(26) Publication Language: English

(30) Priority Data:  
10-2003-0036740 9 June 2003 (09.06.2003) KR

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (for all designated States except US): POSTECH FOUNDATION [KR/KR]; San 31 Hyoja-dong, Nam-gu, 790-784 Pohang-city, Kyungsangbuk-do (KR).

(72) Inventors; and

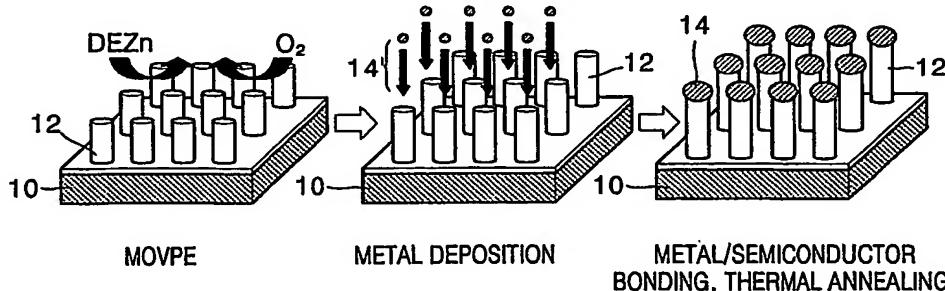
(75) Inventors/Applicants (for US only): YI, Gyu-Chul [KR/KR]; 9-2202 Professor Apt. 756 Jigok-dong, Nam-gu, 790-751 Pohang-city, Kyungsangbuk-do (KR). PARK, Won-II [KR/KR]; Dept. of Materials Science and, Engineering, Pohang University of Science, and Technology, San 31 Hyoja-dong, Nam-gu, 790-784 Pohang-city, Kyungsangbuk-do (KR).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: CONTACTS FABRIC USING HETEROSTRUCTURE OF METAL/SEMICONDUCTOR NANORODS AND FABRICATION METHOD THEREOF



(57) Abstract: Provided are a contact fabric using a heterostructure of metal/semiconductor nanorods and a method of manufacturing the same. An ohmic contact fabric having a low contact resistance or a Schottky contact fabric having a rectification characteristic is formed by selectively depositing metal of nano-sizes onto predetermined portions of zinc oxide/semiconductor nanorods and controlling the work function of the deposited metal and the interfacial characteristics of metal/zinc oxide. The contact fabric can be applied to various nano-sized electronic devices, including Schottky diodes, optical devices, and arrays thereof.

WO 2004/109815 A1